



Michigan Department of Natural Resources
Wildlife Division Report No. 3530
October 2011

Printed by Authority of: P.A. 451 of 1994
Total Number of Copies Printed:25
Cost per Copy:\$2.17
Total Cost:\$54.25
Michigan Department of Natural Resources

2010 MICHIGAN BLACK BEAR HUNTER SURVEY

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ABSTRACT

A random sample of bear hunters was contacted after the 2010 hunting season to determine hunter participation, hunting methods, bear harvest, and hunter satisfaction. In 2010, an estimated 8,099 hunters spent nearly 55,127 days afield and harvested about 2,395 bears. The number of licenses sold was nearly unchanged from 2009; however, the number of bear harvested increased 8%. Statewide, 30% of hunters harvested a bear in 2010, versus 27% success in 2009. The average number of days required to harvest a bear statewide was 22.8 days in 2010, compared to 27.3 days in 2009. Baiting was the most common hunting method used to harvest bears, although hunters using dogs had greater hunting success than hunters using bait only. Statewide, about 54% of hunters rated their hunting experience as very good or good in 2010 (versus 51% in 2009).

INTRODUCTION

Beginning in 1990, the Michigan Department of Natural Resources (DNR) created black bear (*Ursus americanus*) management units and limited the number of bear hunting licenses issued for each unit. Before 1990, an unlimited number of bear licenses were sold, and licenses were valid in all areas open to bear hunting. In 2000, the DNR modified the licensing system by implementing a zone and quota system based on preference points for issuing bear hunting licenses. Under this system, hunters received one preference point if they applied for a hunt but were not selected in the drawing. Hunters also could obtain a preference point by completing an application but forgoing the drawing. Applicants with the greatest number of preference points had the greatest chance of being selected for a hunt, except that no more than 2% of the licenses were issued to nonresidents.



A contribution of Federal Aid in Wildlife Restoration, Michigan Project W-147-R

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In 2010, ten bear management units in Michigan, totaling about 35,360 square miles, were open for bear hunting (Figure 1). Bear could be hunted September 10-October 26 in all of the Upper Peninsula (UP) units, except the Drummond Island Management Unit (September 10-October 21). Bear could be hunted September 10-25 in Benzie, Leelanau, and Grand Traverse counties and during September 17-25 for remaining counties in the Northern Lower Peninsula (LP) units. The first day of hunt periods in the LP was restricted to hunting with bait only, and the last two days of the hunt periods in the LP (September 24-25) were restricted to hunters using dogs. The Red Oak Management Unit in the LP also had an archery-only hunt during October 8-14.

The DNR set license quotas for each management unit and allocated 11,742 licenses among 37,225 eligible applicants using the preference-point distribution system. Licenses were valid on all land ownership types and allowed a hunter to take one bear of either sex, excluding cubs and female bears with cubs. Bear could be harvested with either a firearm, crossbow, or archery equipment, except for the special archery-only hunt in the Red Oak Management Unit. Hunters 10-years-old or older could use a crossbow to hunt bear. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit did not need the stamp. Hunters could use bait or dogs to hunt bears (except dogs could not be used during September 10-14 in the UP, excluding the Drummond Island Management Unit, and during the archery-only season in the Red Oak Management Unit).

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The bear hunting licenses were valid for all areas open for hunting bear, except Drummond Island, and during all bear hunting periods. Furthermore, the PMH license holder could hunt any season until their bear harvest tag was filled.

The DNR and Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys. Estimates derived from harvest surveys, as well as harvest reported by hunters at mandatory registration stations, and other indices, are used to monitor bear populations and establish harvest regulations.

METHODS

The DNR provided all bear hunters the option to report information about their bear hunting activity voluntarily via the internet. This option was advertised on the DNR website and an email message was sent to all license buyers that had provided an email address to the DNR (2,535 licensees). Hunters reported whether they hunted, number of days spent afield,

whether they harvested a bear, date of harvest, and their hunting methods. Hunters also reported whether other hunters (including bear hunters) caused interference during their hunt. Successful hunters were asked to report harvest date, sex of the bear taken, and harvest method. Finally, hunters were asked to report how satisfied they were with the number of bear seen, number of opportunities they had to take a bear, and their overall bear hunting experience. Following the 2010 bear hunting season, a questionnaire (Appendix A) was mailed to 3,915 randomly selected people (Table 1) that had purchased a bear hunting license (resident, senior, nonresident bear licenses, comprehensive lifetime bear license, and Pure Michigan Hunt) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire in the mail were asked the same questions as hunters responding on the internet.

Estimates were calculated using a stratified random sampling design that included twelve strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (10 management units). Hunters who purchased a license that could be used in multiple management units (PMH license holders) were treated as separate strata (strata 11). In addition, hunters that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (twelfth stratum). The statewide estimate of the mean number of days required to harvest a bear was calculated using a different ratio for each stratum (i.e., separate ratio estimator). The number of bears registered in each stratum was used as an auxiliary variate to improve the precision of ratio estimates.

A 95% confidence limit (CL) was calculated for each estimate. In theory, the CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

Statistical tests are used routinely to determine the likelihood that the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating that the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during early December 2010, and up to two follow-up questionnaires were mailed to nonrespondents. Although 3,915 people were sent the questionnaire, 49 surveys were undeliverable, resulting in an adjusted sample size of 3,866. Questionnaires were returned by 2,992 people, yielding a 77% adjusted response rate. In addition, 643 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS

In 2010, 8,976 bear hunting licenses were purchased (Table 1), nearly unchanged from 2009 (8,953). Most of the people buying a license in 2010 were men (91%), and the average age of the license buyers was 47 years (Figure 2). About 4% of the license buyers (340) were younger than 17 years old.

Nearly $90 \pm 1\%$ of the license buyers hunted bear (Table 2). These hunters spent 55,127 days afield ($\bar{x} = 6.8$ days/hunter) and harvested 2,395 bears. Harvest increased by 8% from 2009 (Figure 3). Marquette, Baraga, Ontonagon, Gogebic, and Luce counties had the highest number of bear hunters and bears harvested during 2010 (Table 3).

The average number of days required to harvest a bear statewide was 22.8 days in 2010 (Table 2, Figure 4), which was significantly less than in 2009 (27.3 days). Mean effort per harvested bear also declined significantly in the Eastern UP between 2009 and 2010 (Figure 5). Long-term trends are difficult to interpret because hunting seasons have been lengthened and hunt periods and areas have been added since 1992; thus, these annual estimates are not directly comparable. In 1994, most early hunt periods were increased from 37 to 42 days and a third hunt period was added in the Gwinn Management Unit. In 1995, a third hunt period was added in the Baraga Management Unit. In 1996, Baldwin and Gladwin management units were created, and a third period was added to Bergland, Amasa, Carney, and Newberry management units. In 2002, the units in the LP were expanded slightly to coincide with county boundaries. In 2006, the area of the Bladwin Unit was increased slightly with the addition of Leelanau County. The units having the highest effort per harvested bear during recent years have been Carney, Gladwin, and Gwinn management units, while Baldwin and Drummond Island management units have had the lowest effort per harvested bear (Figure 6).

About 35% of the bear hunters hunted on private lands only in 2010, 45% hunted on public lands only, and 19% hunted on both private and public lands (Table 4). Bear hunters spent 18,527 days afield on private land, 23,480 days hunting on public land only, and 12,739 days hunting on both private and public lands (Table 5). Of the estimated 2,395 bear harvested in 2010, $41 \pm 3\%$ of these bears (974 ± 78) were taken on private land. About $59 \pm 3\%$ of the bears ($1,418 \pm 97$) were taken on public land.

For bears that the harvest date was reported, about 26% of these bears were taken during the first five days and 52% during the first ten days of the hunting season (Figure 7). Of the bears harvested, $57 \pm 3\%$ were males ($1,358 \pm 93$) and $43 \pm 3\%$ were females ($1,029 \pm 84$; Table 6). Statewide, 30% of hunters harvested a bear in 2010, compared to 27% success in 2009 (Table 2). Hunter success ranged from 14-100% among the bear management units (Table 2).

Most hunters (85%) used firearms while hunting bear, although 19% of the hunters used archery equipment (compound, recurve, or long bows), and 5% used a crossbow (Tables 8 and 9). Most hunters (87%) used a firearm to harvest their bear, while 11% used archery equipment, and 2% used a crossbow (Tables 10 and 11). Hunters using a crossbow to hunt bear were required to obtain a crossbow stamp, unless they were a disabled hunter that

already had a DNR-issued crossbow permit. About $61 \pm 7\%$ of the bear hunters using a crossbow in 2010 had obtained the crossbow stamp in 2010, and about $68 \pm 6\%$ of the bear hunters using a crossbow in 2010 had obtained the crossbow stamp in either 2009 or 2010.

Most hunters ($85 \pm 1\%$) relied primarily on baiting as a means of locating and attracting bears (Table 12). About $11\% (\pm 1\%)$ of hunters relied primarily on dogs alone or a combination of baiting and dogs to locate bears. About 2% of hunters relied on a hunting method not involving dogs or bait.

About $84 \pm 2\%$ of the harvested bears were taken with the aid of bait only (Table 13). Hunting success for hunters using bait only was $29 \pm 2\%$, while hunting success for hunters using dogs was $37 \pm 5\%$ in 2010. Success among hunters using dogs has usually been higher than among hunters using bait only (Figure 8).

About 32% of bear hunters statewide rated the number of bear seen during the 2010 hunting season as very good or good, and 38% rated bear seen as poor or very poor (Table 14). Similarly, about 29% of hunters statewide rated the number of chances they had to take a bear during the 2010 hunting season as very good or good, and 39% rated their chances as poor or very poor (Table 15).

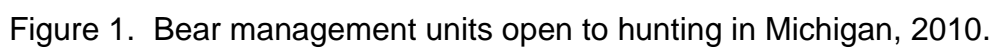
Statewide, about 54% of hunters rated their hunting experiences as very good or good (versus 51% in 2009), and 25% rated their hunting experiences as poor or very poor (Table 16). Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Figure 9). In 2010, 21% of the hunters were interfered with by other hunters (Table 17). Most of this interference was caused by another bear hunter; 16% of the hunters reported that other bear hunters interfered with their hunt. Generally, hunters in the UP were less likely to be interfered with by other hunters than hunters in the LP (Table 17, Figure 10).

ACKNOWLEDGEMENTS

I thank all the bear hunters that provided information. Autumn Feldpausch, Jamie Fuller, Anna Mitterling, Theresa Riebow, and Hannah Schauer completed data entry. Greg Bird developed the internet harvest reporting application. The figure of bear management units and the area open to hunting was prepared by Marshall Strong. Adam Bump, Russ Mason, Cheryl Nelson, and Doug Reeves reviewed a previous version of this report.

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- Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? *Journal of Insect Science* 3:34.



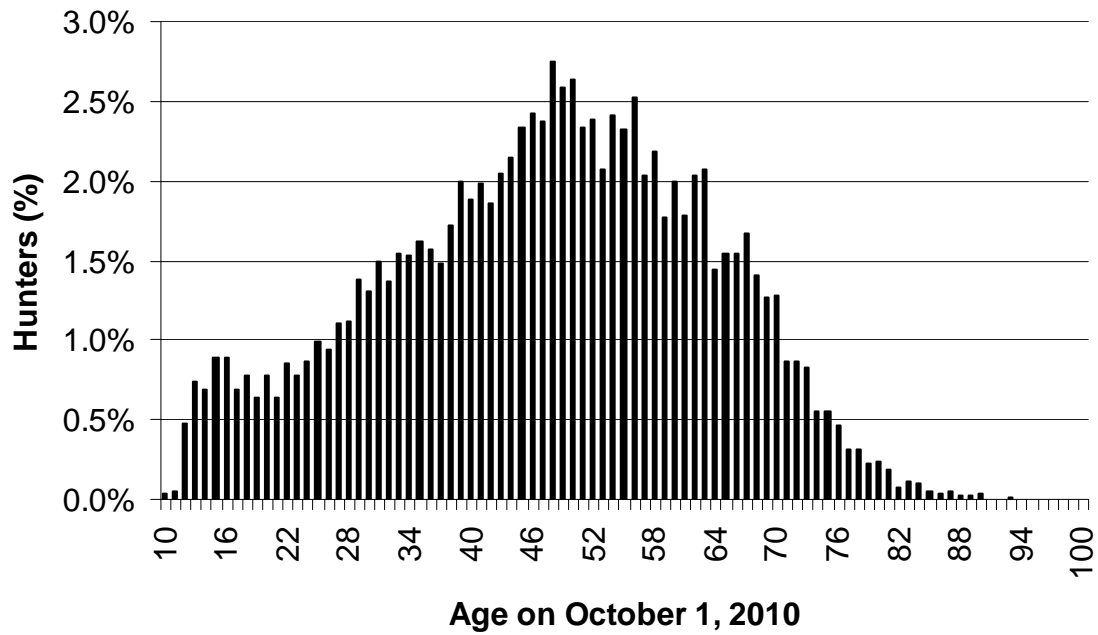


Figure 2. Age of people that purchased a bear hunting license in Michigan for the 2010 hunting season ($\bar{x} = 47$ years). Licenses were purchased by 8,976 people.

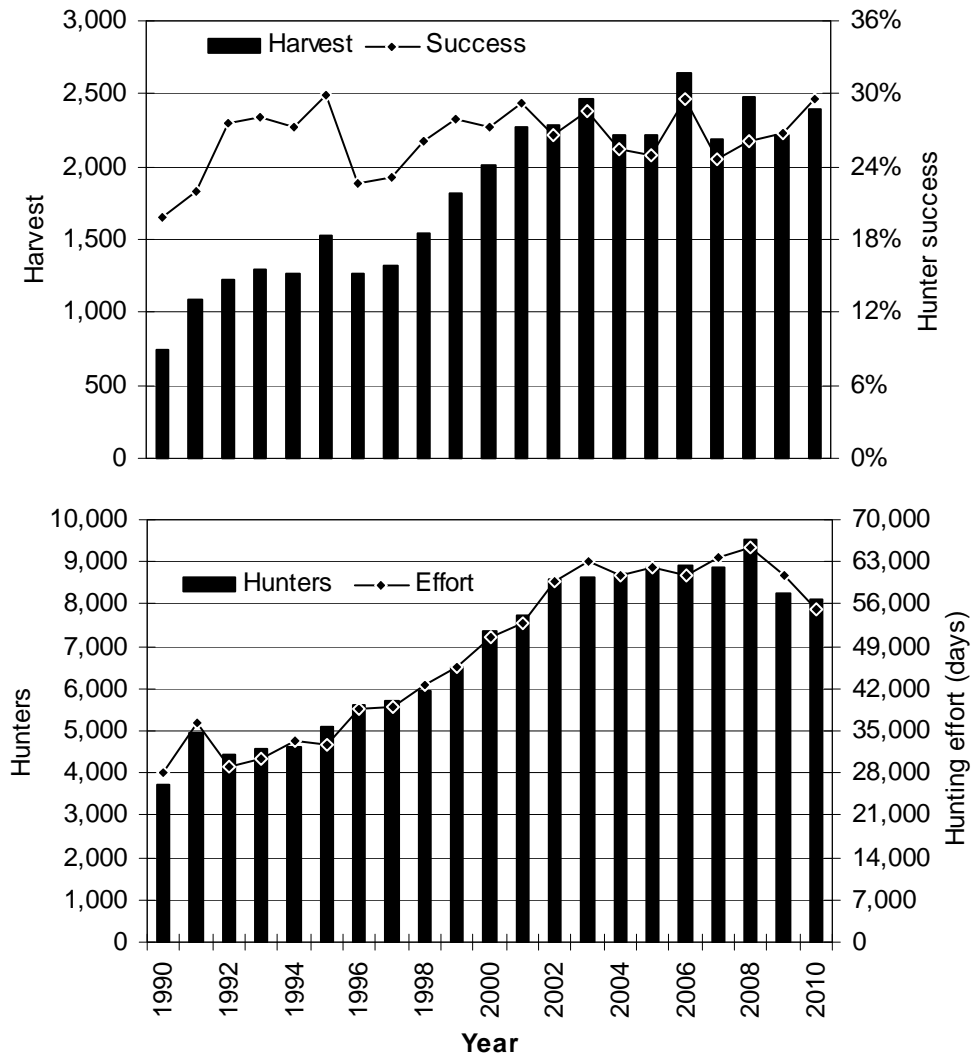


Figure 3. Estimated harvest, hunting success, number of hunters, and hunting effort during bear hunting seasons, 1990-2010.

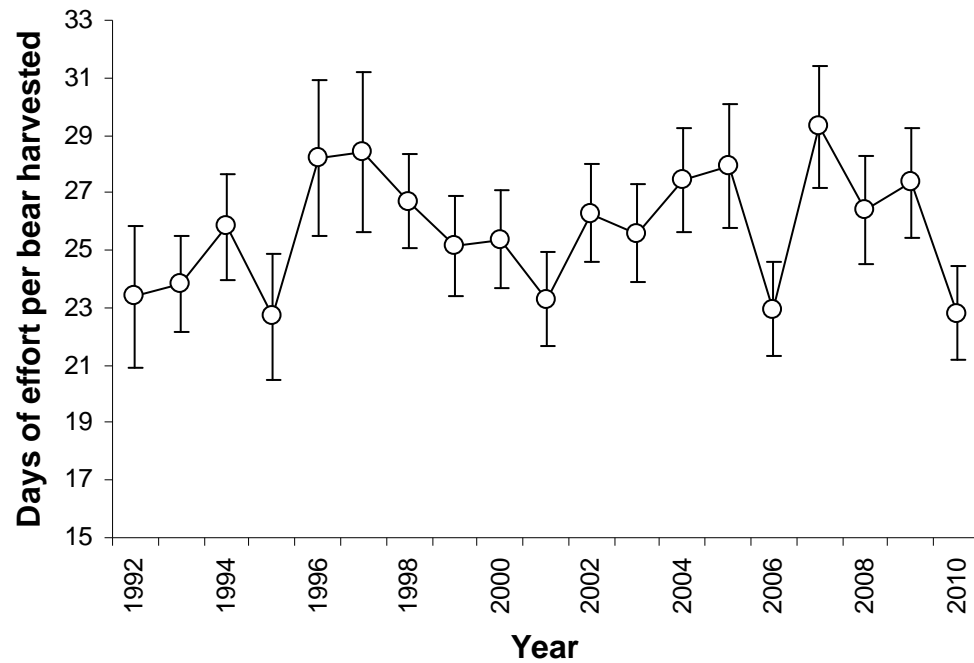


Figure 4. Estimated mean number of days required to harvest a bear statewide in Michigan during 1992-2010. Vertical bars represent the 95% confidence interval.

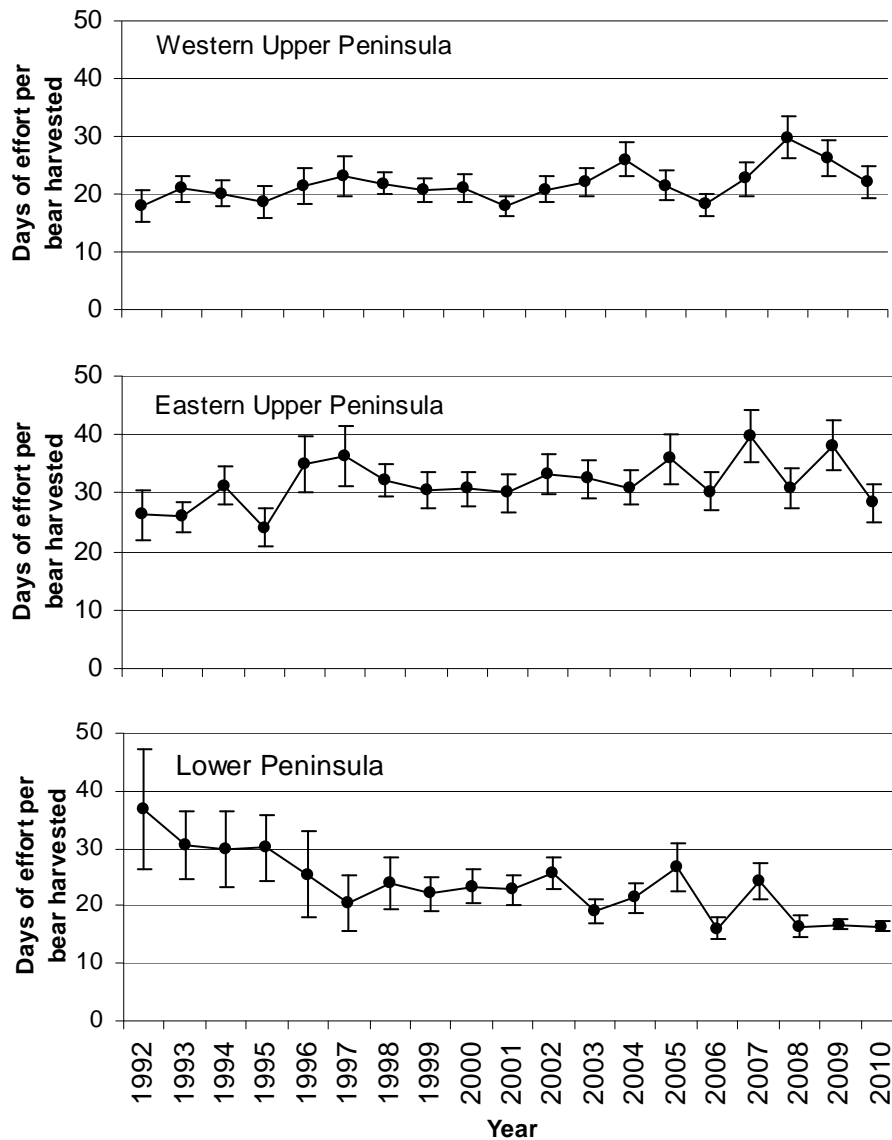


Figure 5. Estimated mean number of days required to harvest a bear in Michigan during 1992-2010, summarized by ecological region. Western UP consisted of Amasa, Baraga, and Bergland units, and Eastern UP consisted of Carney, Gwinn, and Newberry units (Drummond Island Management Unit excluded). Lower Peninsula consisted of Baldwin, Gladwin, and Red Oak management units. Vertical bars represent the 95% confidence interval.

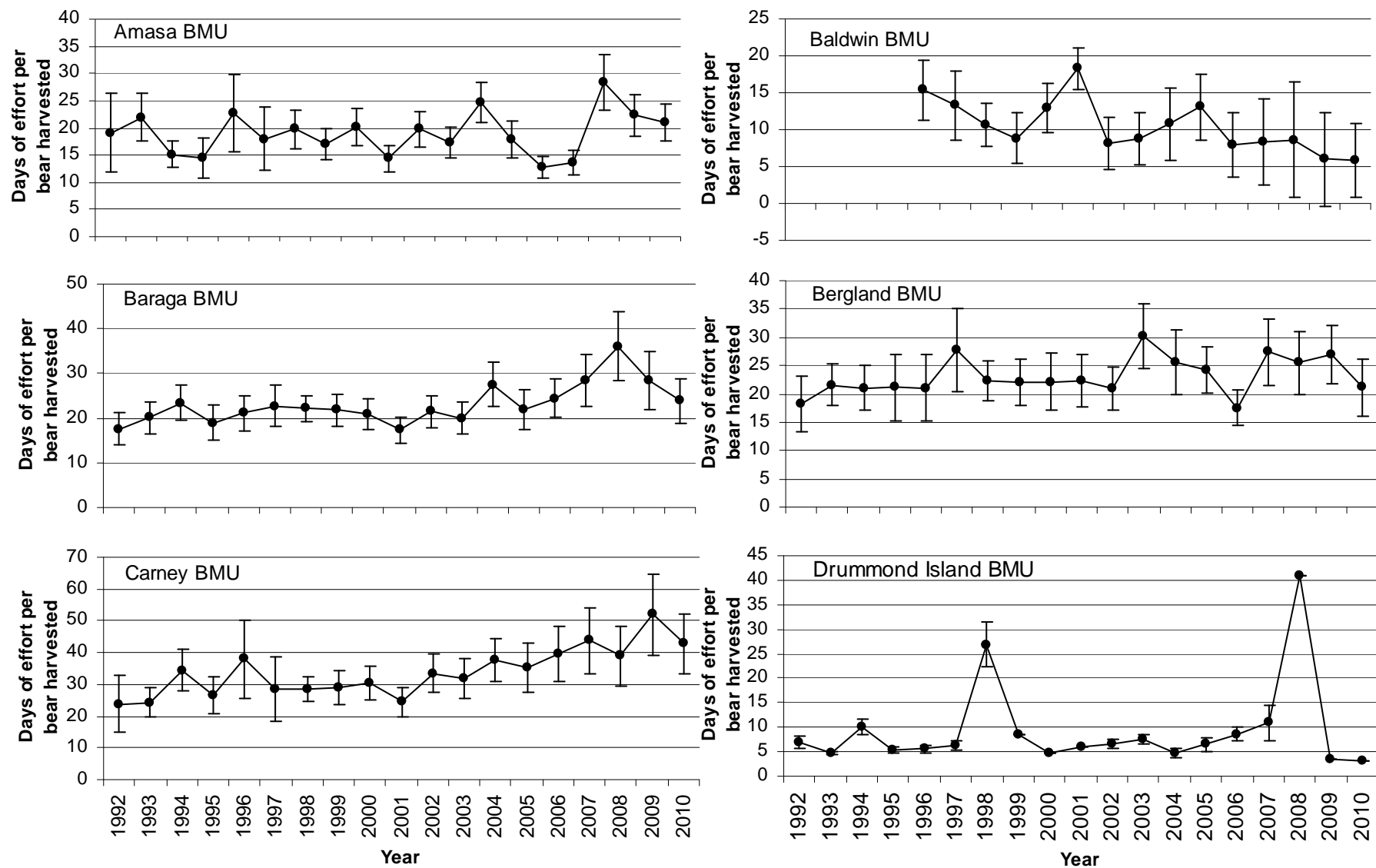


Figure 6. Estimated mean number of days required to harvest a bear in Michigan during 1992-2010, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

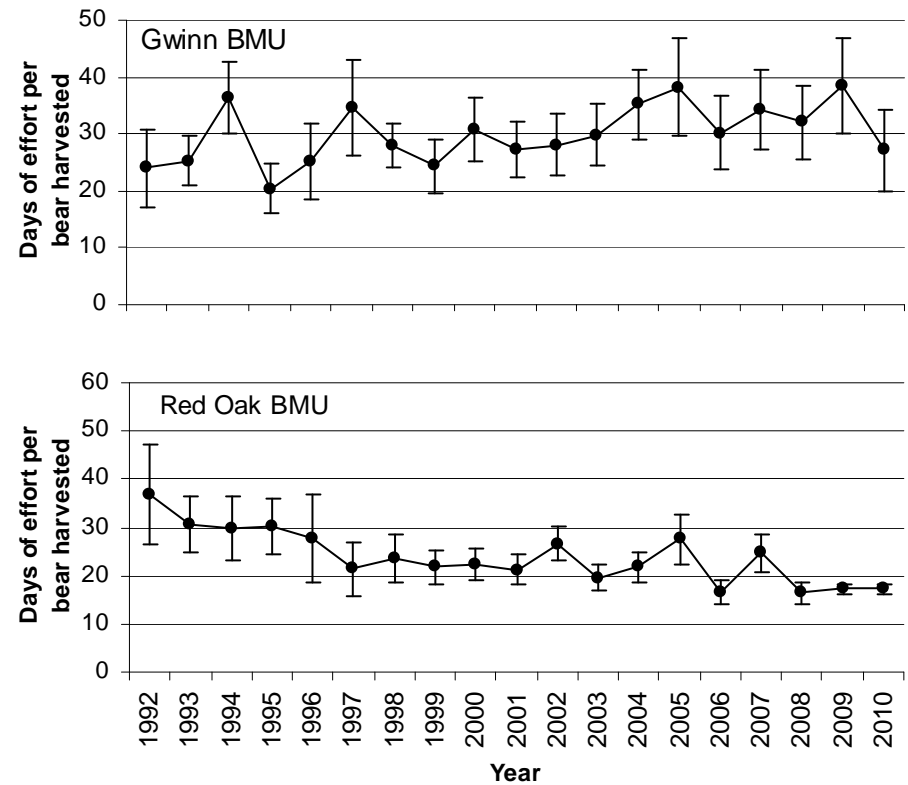
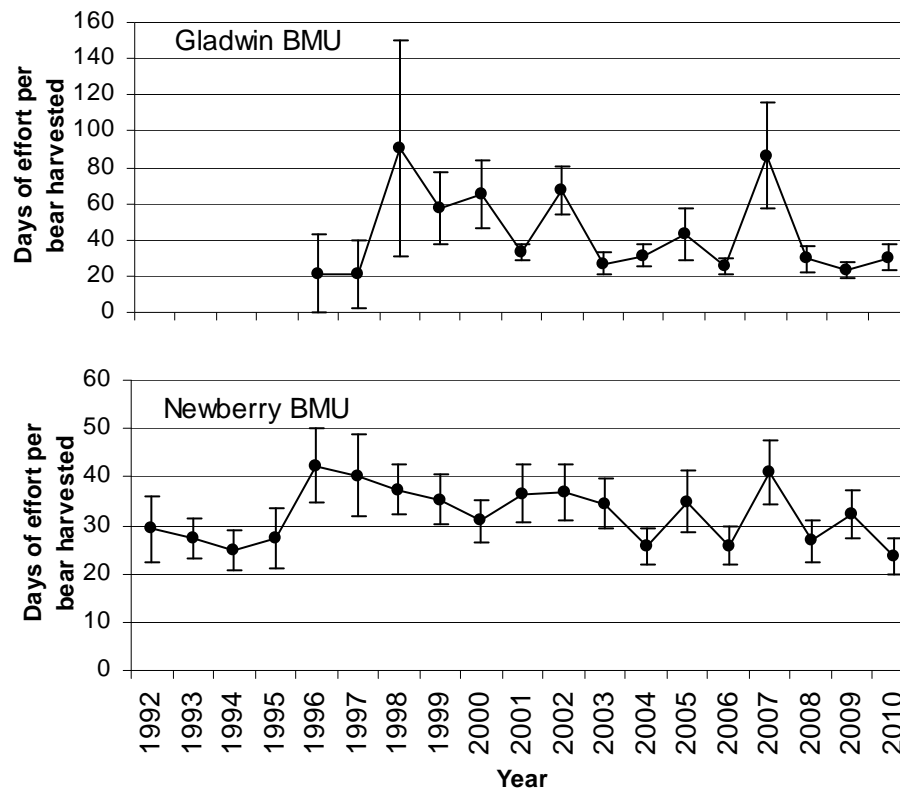


Figure 6 (continued). Estimated mean number of days required to harvest a bear in Michigan during 1992-2010, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

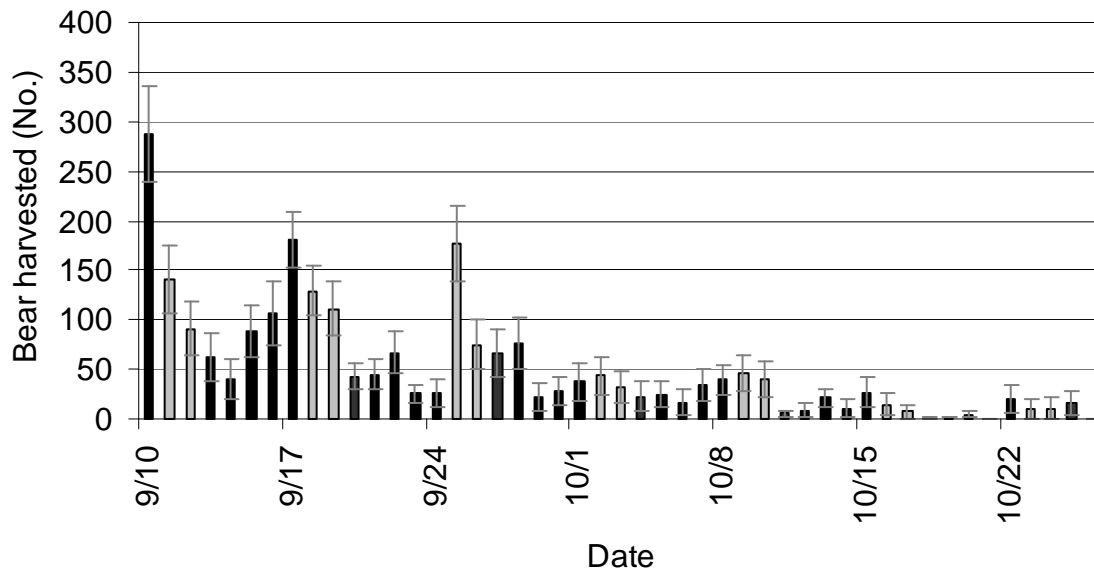


Figure 7. Estimated number of bear harvested by date during the 2010 bear hunting season (includes all hunt periods). An additional 7 ± 8 bear were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval. The opening of the bear hunting season was September 10 in the UP and September 17 in the LP. Hunting with dogs in the UP started on September 15.

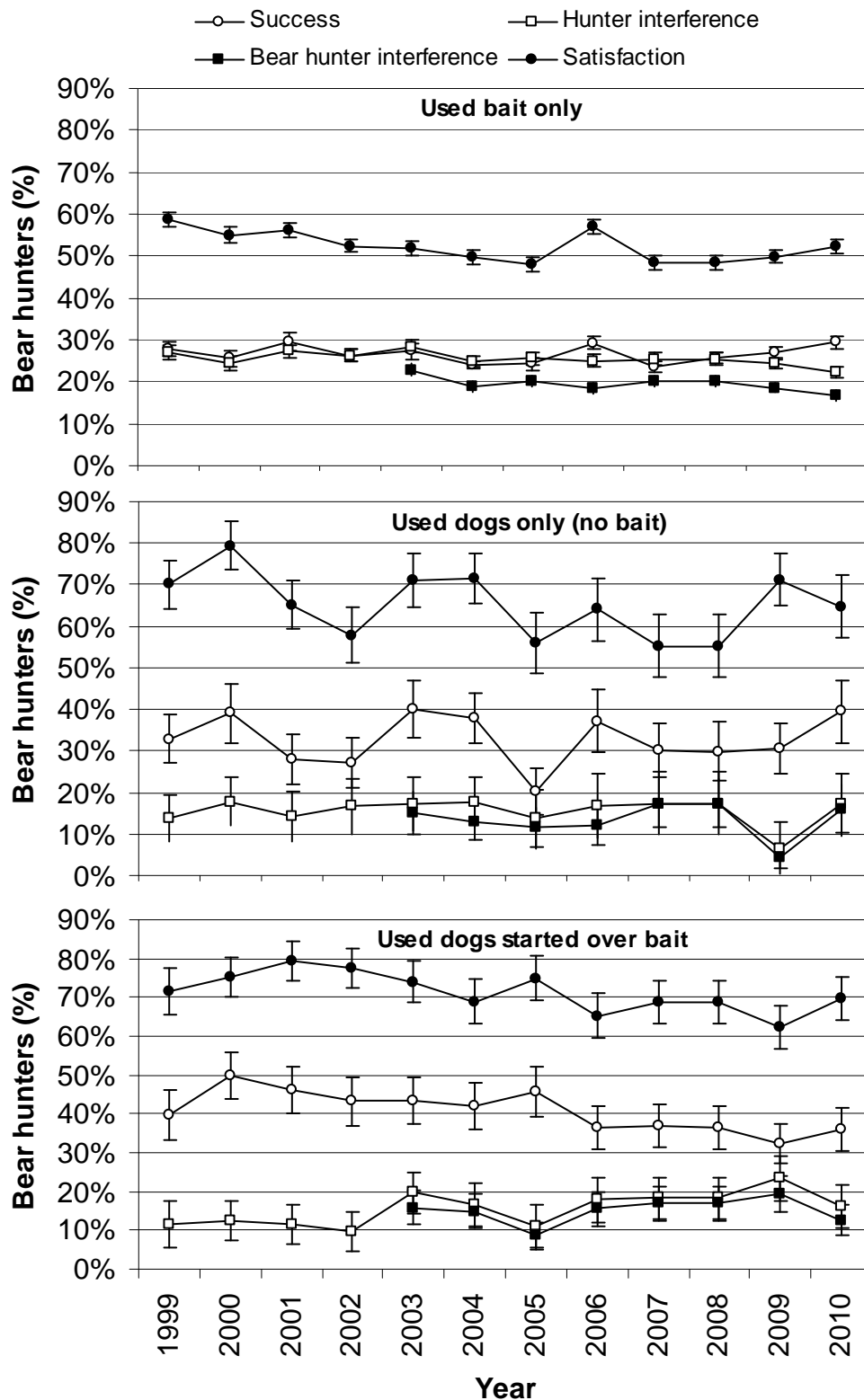


Figure 8. Estimated hunter success, interference, and satisfaction of bear hunters with their hunting experience in Michigan during 1999-2010, summarized by primary method of hunt. Vertical bars represent the 95% confidence interval. Interference was the proportion of hunters indicating they experienced interference from other hunters. Satisfaction was the proportion of hunters rating their hunting experience as very good or good.

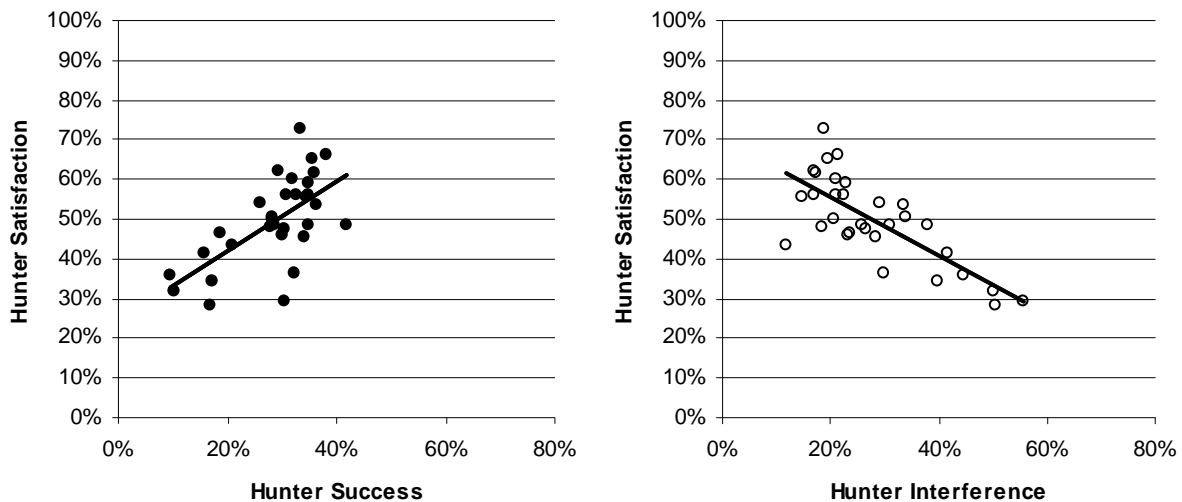


Figure 9. Hunter satisfaction (hunters rating their hunting experience as very good or good) relative to hunter success and hunter interference for 31 counties in Michigan during the 2010 bear hunting season (included only counties with at least 20 hunters). Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

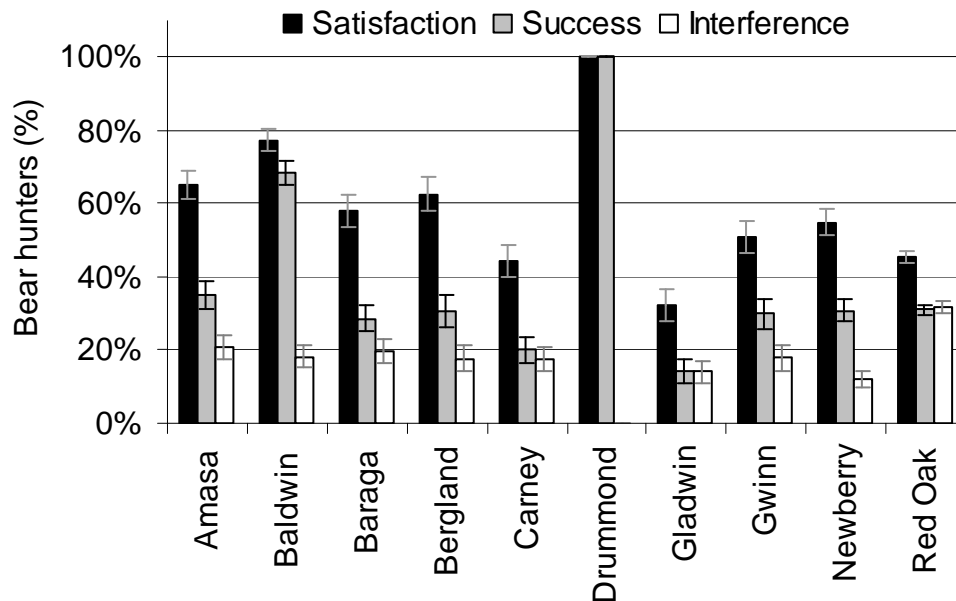


Figure 10. Estimated hunter satisfaction, hunting success, and level of hunter interference in Michigan's management units during the 2010 bear hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Error bars represent the 95% confidence limit. Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

Table 1. Number of people purchasing hunting licenses for the 2010 Michigan bear hunting seasons and number of people selected for survey sample.

Management unit	Licenses available (quota)	Number of eligible applicants ^a	Licenses sold ^b	Number of people included in mail survey sample ^c
Amasa	640	2,291	552	305
Baldwin	50	2,505	50	47
Baraga	2,295	4,156	1,689	491
Bergland	1,865	2,422	1,429	469
Carney	1,200	2,270	849	387
Drummond Island	2	169	2	1
Gladwin	140	975	110	103
Gwinn	1,735	3,296	1,247	447
Newberry	2,620	7,766	2,018	747
Red Oak	1,195	11,375	1,027	915
Pure Michigan Hunt	3	NA	3	3
Statewide	11,745	37,225	8,976	3,915
Applicants opting for Preference Point ^d		17,712		

^aNumber of eligible applicants selecting the management unit as their first choice to hunt.

^bFewer licenses were sold than the number available because some successful applicants failed to purchase a license.

^cAn additional 643 hunters responded on the internet before the mail sample was selected; these internet responders were used in the calculating survey estimates.

^dApplicants that chose to receive a preference point rather than enter into the drawing for a hunting license.

Table 2. Estimated number of hunters, harvest, hunter success, hunting effort, mean days hunted, and mean effort per harvested bear during the 2010 Michigan bear hunting season.

Management Unit	Hunters		Harvest		Hunter success		Hunting effort		Days hunted per hunter (\bar{x})		Days hunted per harvested bear (\bar{x})	
	No.	95% CL ^a	No.	95% CL ^a	%	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a
Amasa	516	11	181	20	35	4	3,491	231	6.8	0.4	19.3	2.8
Baldwin	47	1	32	2	68	3	196	12	4.2	0.2	6.1	0.4
Baraga	1,528	41	439	59	29	4	10,205	760	6.7	0.5	23.2	4.5
Bergland	1,227	45	375	55	31	4	7,766	624	6.3	0.5	20.6	4.5
Carney	762	22	153	27	20	4	6,286	488	8.3	0.6	41.1	8.6
Drummond Is.	2	0	2	0	100	0	4	0	2.0	0.0	2.3	0.0
Gladwin	104	2	15	3	14	3	442	24	4.2	0.2	29.9	6.5
Gwinn	1,153	29	345	48	30	4	9,110	794	7.9	0.7	26.1	6.4
Newberry	1,787	43	550	57	31	3	12,468	887	7.0	0.5	22.6	3.3
Red Oak	971	7	301	14	31	1	5,153	126	5.3	0.1	17.1	1.0
Pure MI Hunt	2	0	2	0	100	0	7	0	3.5	0.0	3.5	0.0
Statewide ^b	8,099	84	2,395	116	30	1	55,127	1,641	6.8	0.2	22.8	1.6

^a95% confidence limits.

^bColumn totals may not equal statewide totals because of rounding.

Table 3. Estimated number of hunters, harvest, hunter success, hunting effort, hunter satisfaction, and hunt interference during the 2010 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Alcona	139	10	42	6	30	4	694	69	46	4	23	3
Alger	282	46	98	28	35	8	1,979	454	56	9	17	7
Alpena	93	9	28	5	31	5	458	54	47	5	26	4
Antrim	15	4	3	2	17	10	62	21	67	12	17	10
Arenac	1	1	0	0	0	0	0	0	100	0	0	0
Baraga	756	69	221	45	29	5	4,326	571	62	6	17	4
Benzie	4	1	3	1	75	11	13	3	100	0	25	11
Charlevoix	23	5	4	2	17	8	108	24	28	10	51	10
Cheboygan	71	8	25	5	35	5	302	37	48	6	38	5
Chippewa	448	55	154	35	34	7	3,076	572	56	7	15	5
Clare	35	5	4	2	10	4	161	27	32	8	50	8
Crawford	28	5	10	3	36	8	101	17	62	8	17	7
Delta	389	52	73	25	19	6	3,583	702	46	7	24	6
Dickinson	320	44	84	24	26	7	2,442	459	54	7	29	7
Emmet	25	5	8	3	30	9	113	26	29	9	56	10
Gladwin	52	5	5	2	10	4	221	27	36	7	45	7
Gogebic	538	61	205	44	38	7	3,590	579	66	7	21	6

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2010 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Gd. Traverse	5	2	0	0	0	0	28	16	100	0	54	18
Houghton	288	51	94	31	33	9	2,025	507	56	10	21	8
Iosco	18	4	10	3	53	11	80	22	79	9	21	9
Iron	354	21	126	18	36	5	2,340	226	65	5	20	4
Isabella	1	0	0	0	0	0	5	0	0	0	0	0
Kalkaska	48	6	8	3	17	5	229	37	35	6	40	6
Keweenaw	146	38	49	22	34	13	928	353	73	12	19	11
Lake	14	2	7	1	54	7	56	8	77	6	30	6
Leelanau	0	0	0	0	0	0	0	0	0	0	0	0
Luce	539	58	166	35	31	6	3,204	514	56	6	22	5
Mackinac	226	40	64	23	28	8	1,512	369	51	9	34	9
Manistee	4	1	4	1	100	0	18	8	100	0	75	11
Marquette	840	75	236	43	28	5	6,067	777	50	5	21	4
Mason	0	0	0	0	0	0	0	0	0	0	0	0
Mecosta	0	0	0	0	0	0	0	0	0	0	0	0
Menominee	529	35	110	24	21	4	4,264	457	44	5	12	3
Midland	0	0	0	0	0	0	0	0	0	0	0	0

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2010 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	95%		95%		95%		95%		95%		95%	
	Total	CL	Total	CL	%	CL	Total	CL	%	CL	%	CL
Missaukee	51	7	16	4	32	7	266	44	36	7	30	6
Montmorency	129	10	44	6	34	4	659	63	45	4	29	4
Muskegon	0	0	0	0	0	0	0	0	0	0	0	0
Newaygo	8	1	4	1	50	8	23	4	50	8	25	7
Oceana	0	0	0	0	0	0	0	0	0	0	0	0
Ogemaw	33	6	14	4	42	8	156	31	48	8	26	7
Ontonagon	669	72	233	47	35	6	4,216	579	59	6	23	5
Osceola	16	3	3	2	16	9	49	12	23	9	38	11
Oscoda	72	8	26	5	36	5	393	55	54	6	34	5
Otsego	48	7	8	3	16	5	290	51	42	7	42	7
Presque Isle	113	10	31	6	28	4	614	65	48	4	18	3
Roscommon	93	9	27	5	29	4	464	55	48	5	31	4
Schoolcraft	383	51	123	30	32	7	2,799	506	60	7	21	6
Wexford	19	3	13	2	68	8	65	11	74	8	19	8
Unreported	615	70	12	10	2	2	3,144	476	48	6	20	5

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the 2010 bear hunting season.

Management unit	Land type															
	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Amasa	194	21	38	4	206	21	40	4	109	17	21	3	8	5	2	1
Baldwin	18	2	39	4	16	2	34	3	13	2	27	3	0	0	0	0
Baraga	474	61	31	4	694	67	45	4	353	56	23	4	8	10	1	1
Bergland	204	44	17	4	763	63	62	5	247	48	20	4	12	12	1	1
Carney	422	36	55	4	180	29	24	4	154	28	20	4	5	6	1	1
Drummond Is.	0	0	0	0	1	0	50	0	1	0	50	0	0	0	0	0
Gladwin	43	5	42	5	44	5	42	5	17	3	16	3	0	0	0	0
Gwinn	437	51	38	4	519	53	45	4	186	38	16	3	11	10	1	1
Newberry	534	57	30	3	874	65	49	3	365	50	20	3	13	11	1	1
Red Oak	485	15	50	2	319	14	33	1	114	10	12	1	53	7	5	1
Pure MI Hunt	1	0	50	0	0	0	0	0	1	0	50	0	0	0	0	0
Statewide	2,813	117	35	1	3,616	130	45	2	1,559	103	19	1	111	24	1	0

Table 5. Estimated number of days of hunting effort on private and public lands during the 2010 Michigan bear hunting season.

Management unit	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Amasa	1,339	200	1,253	186	865	165	34	39
Baldwin	72	10	76	10	49	8	0	0
Baraga	2,982	497	4,476	644	2,718	584	29	49
Bergland	1,464	416	4,452	543	1,850	431	0	0
Carney	3,211	405	1,405	315	1,646	377	24	26
Drummond Is.	0	0	1	0	3	0	0	0
Gladwin	193	26	172	24	77	18	0	0
Gwinn	3,202	625	3,918	557	1,882	537	107	142
Newberry	3,384	530	5,906	702	3,073	622	105	121
Red Oak	2,676	114	1,820	100	573	66	84	30
Pure MI Hunt	3	0	0	0	4	0	0	0
Statewide ^a	18,527	1,144	23,480	1,288	12,739	1,173	381	201

^aColumn totals may not equal statewide totals because of rounding errors.

Table 6. Number of applicants, licenses sold, estimated number of hunters, harvest, hunting effort (days), and hunting success during Michigan bear hunting seasons, 2004-2010.

Region	Year						
	2004	2005	2006	2007	2008	2009	2010
Upper Peninsula							
Applicants	28,295	28,600	26,554	24,712	23,206	23,086	22,370
Licenses sold	7,558	7,808	7,786	7,774	8,195	7,260	7,786
Hunters	7,062	7,305	7,310	7,221	7,625	6,664	6,975
Harvest	1,834	1,908	2,176	1,817	1,948	1,759	2,046
Males (%)	63	63	63	62	59	62	57
Females (%)	36	36	36	36	40	38	42
Unknown (%)	1	1	1	2	1	1	0
Hunter-days	52,158	53,729	53,113	55,025	56,531	53,197	49,329
Hunter success (%)	26	26	30	25	26	26	29
Lower Peninsula							
Applicants	15,616	15,625	14,634	14,370	15,386	16,020	14,855
Licenses sold	1,737	1,654	1,670	1,740	1,983	1,693	1,187
Hunters	1,653	1,567	1,608	1,653	1,888	1,592	1,122
Harvest	388	303	463	365	528	451	347
Males (%)	61	58	60	56	58	54	54
Females (%)	38	39	38	43	40	46	46
Unknown (%)	1	3	2	1	1	0	0
Hunter-days	8,451	8,250	7,589	8,838	8,984	7,697	5,791
Hunter success (%)	23	19	29	22	28	28	31
Statewide							
Applicants ^a	54,831	57,040	55,050	54,014	55,458	56,772	54,937
Licenses sold ^b	9,295	9,462	9,456	9,514	10,178	8,953	8,976
Hunters	8,714	8,872	8,918	8,874	9,512	8,256	8,097
Harvest	2,221	2,210	2,639	2,181	2,476	2,210	2,393
Males (%)	62	63	63	61	59	60	57
Females (%)	36	36	36	37	40	40	43
Unknown (%)	1	1	1	2	1	0	0
Hunter-days	60,609	61,979	60,702	63,862	65,516	60,894	55,120
Hunter success (%)	25	25	30	25	26	27	30

^aNumber of applicants statewide included people that applied for a preference point.

^bNumber of license sold statewide included people that received Pure Michigan Hunt licenses, which were valid in both the UP and LP.

Table 8. Estimated proportion of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2010.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	82	3	21	3	3	1	0	1
Baldwin	82	3	18	3	0	0	0	0
Baraga	82	3	20	3	5	2	0	0
Bergland	84	4	18	4	5	2	0	0
Carney	86	3	18	3	6	2	0	0
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	88	3	14	3	1	1	0	0
Gwinn	84	3	18	3	4	2	0	1
Newberry	91	2	12	2	3	1	0	0
Red Oak	83	1	32	1	10	1	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide ^a	85	1	19	1	5	1	0	0

^aRow totals equal more than 100% because hunters could use more than one type of equipment during season.

Table 9. Estimated number of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2010.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	424	19	108	17	17	7	2	3
Baldwin	38	2	9	1	0	0	0	0
Baraga	1,253	60	304	52	84	30	0	0
Bergland	1,025	57	216	45	57	25	0	0
Carney	657	30	134	26	46	16	0	0
Drummond Is.	2	0	0	0	0	0	0	0
Gladwin	92	4	15	3	1	1	0	0
Gwinn	969	45	206	40	48	21	4	6
Newberry	1,623	52	218	40	47	20	3	6
Red Oak	805	13	308	14	99	9	3	2
Pure MI Hunt	2	0	0	0	0	0	0	0
Statewide ^a	6,889	114	1,517	96	399	53	11	9

^aRow totals equal more than the estimated number of hunters in the unit because hunters could use more than one type of equipment during season.

Table 10. Estimated proportion of bears harvested by firearms, crossbows, and archery equipment during the 2010 bear hunting season in Michigan.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	81	5	16	5	3	3	0	0
Baldwin	87	3	13	3	0	0	0	0
Baraga	82	6	15	6	4	3	0	0
Bergland	86	6	13	6	2	2	0	0
Carney	91	6	9	6	0	0	0	0
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	100	0	0	0	0	0	0	0
Gwinn	86	6	11	5	3	3	0	0
Newberry	95	2	4	2	2	1	0	0
Red Oak	81	2	17	2	3	1	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide ^a	87	2	11	2	2	1	0	0

Table 11. Estimated number of bears harvested during the 2010 bear hunting season in Michigan, summarized by hunting equipment used to take the bear.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	146	19	29	9	6	5	0	0
Baldwin	28	2	4	1	0	0	0	0
Baraga	358	55	64	26	16	14	0	0
Bergland	322	53	47	23	6	7	0	0
Carney	139	26	14	9	0	0	0	0
Drummond Is.	2	0	0	0	0	0	0	0
Gladwin	15	3	0	0	0	0	0	0
Gwinn	296	45	39	18	11	10	0	0
Newberry	521	57	20	11	9	8	0	0
Red Oak	243	13	50	6	8	3	0	0
Pure MI Hunt	2	0	0	0	0	0	0	0
Statewide ^a	2,072	111	267	43	55	21	0	0

Table 12. Primary hunting methods used to hunt bear in Michigan, 2010.

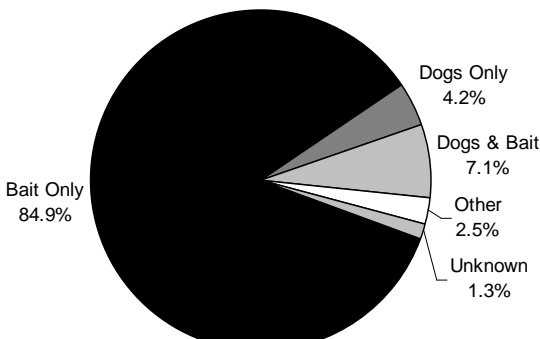
Method	Number of hunters	95% CL	Method used (%)
Bait only	6,877	115	
Dogs only	338	50	
Dogs and bait	577	67	
Other	198	40	
Unknown	109	30	

Table 13. Hunting methods used to harvest bear in Michigan, 2010.

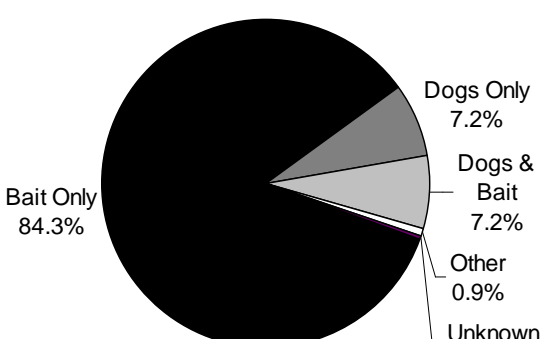
Method	Number of hunters	95% CL	Method used (%)
Bait only	2,015	109	
Dogs only	175	35	
Dogs and bait	176	37	
Other	21	12	
Unknown	7	9	

Table 14. Hunters' level of satisfaction with the number of bear seen during the 2010 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	45	4	16	3	33	4	7	2
Baldwin	66	3	14	2	11	2	9	2
Baraga	32	4	20	3	37	4	10	3
Bergland	36	5	19	4	33	4	12	3
Carney	23	4	15	3	45	4	17	3
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	21	4	16	4	45	5	18	4
Gwinn	30	4	15	3	41	4	13	3
Newberry	31	3	19	3	37	3	13	2
Red Oak	28	1	15	1	43	2	14	1
Pure MI Hunt	50	0	50	0	0	0	0	0
Statewide	32	1	18	1	38	2	12	1

Table 15. Hunters' level of satisfaction with the number of opportunities to take a bear during the 2010 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	40	4	13	3	37	4	9	2
Baldwin	68	3	7	2	14	3	11	2
Baraga	29	4	16	3	39	4	16	3
Bergland	35	5	16	4	33	4	15	3
Carney	22	4	11	3	42	4	25	4
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	17	4	11	3	44	5	29	4
Gwinn	26	4	14	3	39	4	22	4
Newberry	27	3	17	3	41	3	15	2
Red Oak	25	1	12	1	44	2	19	1
Pure MI Hunt	50	0	50	0	0	0	0	0
Statewide	29	1	15	1	39	2	17	1

Table 16. Hunters' level of satisfaction with overall bear hunting experience during the 2010 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	65	4	15	3	18	3	2	1
Baldwin	77	3	11	2	9	2	2	1
Baraga	58	4	14	3	22	4	6	2
Bergland	63	5	17	4	16	3	4	2
Carney	44	4	18	3	32	4	6	2
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	32	4	17	4	43	5	8	3
Gwinn	51	4	18	3	27	4	4	2
Newberry	55	3	16	3	25	3	4	1
Red Oak	45	2	17	1	33	1	5	1
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide	54	2	16	1	25	1	5	1

Table 17. Number and proportion of hunters that experienced interference with another hunter during the 2010 bear hunting season.

Management unit	Hunters interfered by other hunters (all types of hunters)				Hunters interfered by other bear hunters			
	%	95% CL	No.	95% CL	%	95% CL	No.	95% CL
Amasa	17	3	88	16	8	2	43	12
Baldwin	23	3	11	1	18	3	9	1
Baraga	19	3	285	51	15	3	232	47
Bergland	21	4	258	49	18	4	218	45
Carney	18	3	138	27	13	3	95	23
Drummond Is.	0	0	0	0	0	0	0	0
Gladwin	45	5	47	5	20	4	20	4
Gwinn	23	4	270	44	17	3	194	39
Newberry	21	3	368	51	17	3	312	48
Red Oak	28	1	275	14	20	1	198	12
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	21	1	1,741	104	16	1	1,321	94

Appendix A

2010 Michigan Bear Harvest Questionnaire



2010 MICHIGAN BEAR HARVEST REPORT

This information is requested under authority of Part 435, 1994 PA 451, M.C.L. 324.43539.



It is important that you complete and return this report even if you did not hunt or harvest a bear. If you want to provide your answers via the internet, visit our website at <https://secure1.state.mi.us/wildlifesurveys/bear.aspx>.

1. Did you hunt bear in Michigan during the 2010 season?

¹ ☐ Yes ² ☐ No; (If you select "No", you are finished. Please return the survey.)

2. Please report the number of days for each county that you hunted bear in the following table.

COUNTY HUNTED (List each county that you hunted for bear; for example, Marquette County)	NUMBER OF DAYS HUNTED	TYPE OF LAND
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both

3. Did you hunt with a firearm, crossbow, or bow during the 2010 bear season?
(select all that apply)

¹ ☐ Firearm ² ☐ Crossbow ³ ☐ Bow (recurve, compound, or long bow)

4. What hunting method did you use most often when hunting bear in Michigan during the 2010 bear season? (Please select only one item.)

¹ ☐ Hunted over bait only ² ☐ Used dogs only (bait not used)
³ ☐ Used dogs started over bait ⁴ ☐ Used other methods not involving dogs or bait

Please continue on back

5. If you used bait to attract bears, what was the total number of gallons you used during the legal baiting and hunting periods?

_____ Please write in gallons used.

6. Did you kill a bear and place your harvest tag on it? (If no, please skip to question 8.)

¹ ☐ Yes ² ☐ No

7. If your harvest tag was put on a bear, please fill in the information below

a. What date was the bear harvested?

(please check [X] the box for the date of harvest)

September 2010						
S	M	T	W	T	F	S
					10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October 2010						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26				

b. What was the sex of the bear?

¹ ☐ Male ² ☐ Female ³ ☐ Not sure

c. In what county was it harvested?

_____ please write in county name

d. On what type of land was the bear harvested?

¹ ☐ Private ² ☐ Public

e. What weapon was used to harvest bear?

¹ ☐ Firearm ² ☐ Crossbow ³ ☐ Bow (recurve, compound, or long bow)

f. What was the method of harvest?

¹ ☐ Taken over bait ² ☐ Used dogs only (bait not used)
³ ☐ Used dogs started over bait ⁴ ☐ Used other methods not involving dogs or bait

8. Did other hunters interfere with your bear hunting? ¹ ☐ Yes ² ☐ No (Skip to question 10.)

9. If you answered "yes" to the previous question, was the interference caused by other bear hunters? ¹ ☐ Yes ² ☐ No

10. How would you rate the following for your 2010 bear hunting season:

(Select one choice per item.)

	Very Good	Good	Neutral	Poor	Very Poor	Not Applicable
a. Number of bear you saw.	¹ <input type="checkbox"/>	² <input type="checkbox"/>	³ <input type="checkbox"/>	⁴ <input type="checkbox"/>	⁵ <input type="checkbox"/>	⁶ <input type="checkbox"/>
b. Number of opportunities you had to take a bear.	¹ <input type="checkbox"/>	² <input type="checkbox"/>	³ <input type="checkbox"/>	⁴ <input type="checkbox"/>	⁵ <input type="checkbox"/>	⁶ <input type="checkbox"/>
c. Your overall bear hunting experience.	¹ <input type="checkbox"/>	² <input type="checkbox"/>	³ <input type="checkbox"/>	⁴ <input type="checkbox"/>	⁵ <input type="checkbox"/>	⁶ <input type="checkbox"/>

Return the completed report in the enclosed postage-paid envelope. Thanks for your help.